

## NORTH PACIFIC OCEAN

By WILLIS E. HURD

January, 1927, was the second stormy month of the season on the North Pacific Ocean, although possibly it was not quite as rough on the whole as December, which is considered to have been one of the stormiest months in recent years. January, however, produced more gales in the neighborhood of Midway Island and the Hawaiian group, and off the northwestern coast of the United States, than did the preceding month, and storm to hurricane winds were nearly as frequent in east longitudes.

The year opened with the Aleutian low centered over the Gulf of Alaska, in the northeastern part of which the lowest pressure for the month occurred on the 2d. Accompanying it whole gales swept a great portion of the coast from Oregon northward, and strong gales were experienced by vessels midway along the route between Honolulu and the Washington-Oregon ports on the 1st, followed by lesser and more scattered gales on the 2d to 5th. Near or at the Hawaiian Islands fresh gales occurred on the 3d and 4th, as well as on the 22d and 23d. The center of the Aleutian low fluctuated greatly, but on hardly a day did it entirely disappear. In the northwestern part of the Gulf of Alaska its pressure was deepest on the 25th, and over the eastern waters of Bering Sea on the 31st. On the last few days of the month low pressure covered the entire northern part of the ocean, the principal cyclone being reinforced on the west by a great storm which covered an immense region off the northeastern coast of Japan. The average movement of the center of the permanent low was toward the west, it being situated over the Gulf of Alaska in December and over the east central part of Bering Sea in January.

The Pacific anticyclone was much broken up during a part of the month by the incursions not only of the Aleutian low, but of isolated cyclones from the north and west; yet it so maintained its characteristic strength and identity that pressures were slightly above the normal for the period from California to Hawaii.

On the Asiatic coast high pressure prevailed, only one depression coming from the Chinese mainland, and this of no great energy until it entered upon the sea.

The following table gives special data regarding the pressure conditions at several island and coast stations in west longitudes:

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level at indicated hours, North Pacific Ocean, January, 1927

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	<i>Inches</i>	<i>Inch</i>	<i>Inches</i>		<i>Inches</i>	
Dutch Harbor <sup>1</sup>	29.56	-0.08	30.16	5th	28.54	31st.
St. Paul <sup>1</sup>	29.53	-0.16	30.16	14th.	28.64	31st.
Kodiak <sup>1</sup>	29.78	+0.14	30.44	13th.	28.90	25th.
Midway Island <sup>1</sup>	29.96	-0.04	30.28	2d.	29.48	15th.
Honolulu <sup>1</sup>	30.04	+0.04	30.19	4th.	29.83	9th.
Juneau <sup>1</sup>	29.93	+0.05	30.72	8th.	28.85	2d.
Tatoosh Island <sup>1</sup>	29.96	+0.02	30.45	21st.	29.36	27th.
San Francisco <sup>1</sup>	30.13	+0.04	30.45	23d.	29.76	19th.
San Diego <sup>1</sup>	30.10	+0.04	30.37	23d.	29.93	20th.

<sup>1</sup> P. m. observations only.

<sup>2</sup> For 30 days.

<sup>3</sup> A. m. and p. m. observations.

<sup>4</sup> Corrected to 24-hour mean.

During the first two decades of January much rough weather in addition to that of the 1st and 2d occurred

off our northwest coast. An isolated cyclone, cut off from the Aleutian low, remained in the neighborhood from the 3d to the 11th, and other disturbances caused high winds over narrow areas in the same region on the 14th to 15th and 17th to 19th. At Tatoosh Island winds of 60 or more miles an hour occurred on the 1st, 5th, 8th, 9th, 10th, 13th, and 19th, the maximum velocity being 72 miles an hour from the east on the 19th.

Two important extratropical storms appeared over the waters of the Far East. The first left China on the 14th, and developed rapidly on the following day in the Eastern and Japan Seas, where gales occurred from Shanghai northward. On the 15th-16th this storm crossed central Japan. It attained sufficient intensity on the 16th to cause winds of hurricane force, as experienced by the *Wheatland Montana* near 42° N., 154° E. (see table), and winds of force 11, on the 17th, as noted by the *Stanley Dollar*, near 36° N., 162½° E. Thereafter it apparently joined forces with the Aleutian low.

The second storm first appeared on the 17th between Taiwan and southern Japan. It moved with great rapidity, and early on the 18th had covered the Japan Sea, while by night it lay off the northernmost island of Japan, whence it continued northeastward during the 19th, though with abated speed. Such reports as are at hand indicate that it existed with varying intensity between the Kuril Islands and the Aleutians, besides extending far southward, until the close of the month, causing hurricane winds on the 19th near 35° N., 154° E., as reported by the *Lio*, and storm gales on the 22d, 25th, and 28th, as reported by other vessels, between the one hundred and fifty-fourth and one hundred and eightieth meridians.

For the North Pacific as a whole, gales were strongest and most frequent over the great area lying west of longitude 170° W. and north of the 25th parallel, in some portion of which they occurred every day.

In the neighborhood of Midway Island cyclonic conditions existed on the 5th to 7th, and again from the 11th to 15th. The latter disturbance was the severer and caused strong southerly gales east of Midway, which at the last threatened the Hawaiian Islands with a strong kona before it finally disappeared.

Wind movement at Honolulu was the greatest of any January since records began in 1905, being 11.3 miles an hour for the average. The maximum velocity was 47 miles from the northeast on the 3d, followed by 46 miles from the east on the 4th, and winds continuing strong until the 5th. This was the warmest January on record by two-tenths of a degree. Precipitation was below the normal. Three waterspouts, the first ever known to be observed at Honolulu, were reported in or near the harbor.

In the Gulf of Tehuantepec fresh to strong northers occurred frequently, being reported by vessels as of forces 8 to 9 on nine days.

Fog formed quite generally off the California coast from the 1st to the 7th and toward the end of the month, and was observed at San Francisco on 15 days. East of 170° W. fog was frequently met with throughout January along the northern and middle routes. The American steamer *Eldridge* encountered it daily from the 17th, in 50° N., 175° W. until the 24th, in 49° N., 130° W. West of the one hundred and eightieth meridian little was observed, but on the China coast it was reported off Shanghai and Hongkong early in the month. Its southernmost appearance was on the 19th, near 19° N., 123° W.